

corresponding month of the last 4 years the dates of occurrence of fog near the Grand Banks numbered 5 more than the average; between the 55th and 65th meridians 2 more than the average; and west of the 65th meridian 5 more than the

average. The fog noted by shipmasters and that reported by observers of the Weather Bureau on the New England and middle Atlantic coasts generally attended the advance or passage of general storms.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

The distribution of mean temperature over the United States and Canada for June, 1892, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the temperature is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest in the Colorado Desert, California, and the Gila Valley, Arizona, where it was above 90, and the mean readings were above 85 along the lower Rio Grande River, in southwestern New Mexico, over a great part of south-central and western Arizona, and in southeast California. In the interior of southeastern Texas, and at points in southern portions of the Gulf States, the mean temperature was above 80. The mean temperature was lowest in the mountains of central Colorado, and at Anticosti Island, Gulf of Saint Lawrence, where it was below 50, and the mean readings were below 60 in eastern Maine, the Canadian Maritime Provinces, over the north part of the upper lake region, and in areas in the middle and northern Rocky Mountain and plateau regions. Along the immediate Pacific coast north of San Francisco, Cal., the mean temperature was below 55.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for June for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for June, 1892; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for June during the period of observation and the years of occurrence:

State and station.	(1) Normal for the month of June.	(2) Length of record.	(3) Mean for June, 1892.	(4) Departure from normal.	(5) Extreme monthly mean for June.			
					Highest.	Year.	Lowest.	Year.
<i>Arizona.</i>	°	Years	°	°	°	°	°	°
Fort Apache.....	71.8	20	66.5	- 5.3	78.0	1876	63.6	1884
Fort Mohave.....	88.9	21	86.4	- 2.5	95.3	1876	83.4	1890
Whipple Barracks.....	69.7	21	66.6	- 3.1	78.9	1876	62.8	1884
<i>Arkansas.</i>								
Lead Hill.....	77.1	10	.....	.....	80.2	1885	74.9	1889
<i>California.</i>								
Fort Bidwell.....	63.5	20	59.1	- 4.4	70.6	1871	55.4	1891
Riverside.....	71.5	10	.....	.....	78.1	1883	67.1	1890
<i>Colorado.</i>								
Las Animas.....	69.8	9	69.0	- 0.8	72.5	1887	68.1	1884
<i>Florida.</i>								
Merritts Island.....	79.0	10	73.8	- 5.2	83.4	1890	73.8	1892
<i>Georgia.</i>								
Forsyth.....	76.8	18	78.5	+ 1.7	81.9	1880, 1881	74.2	1884
<i>Idaho.</i>								
Boise Barracks.....	66.6	18	65.2	- 1.4	74.3	1871	60.0	1891
Fort Sherman.....	61.3	9	60.4	- 0.9	64.4	1882	56.2	1887
<i>Illinois.</i>								
Centralia.....	72.7	10	76.0	+ 3.3	77.0	1891	69.0	1889
<i>Indiana.</i>								
La Fayette.....	70.3	10	72.4	+ 2.1	75.7	1890	66.2	1889
<i>Indian Territory.</i>								
Fort Supply.....	75.4	12	75.6	+ 0.2	79.2	1881	72.6	1891
<i>Iowa.</i>								
Cresco.....	66.1	19	63.5	- 2.6	72.0	1873	62.8	1877

Deviations from normal temperature—Continued.

State and station.	(1) Normal for the month of June.	(2) Length of record.	(3) Mean for June, 1892.	(4) Departure from normal.	(5) Extreme monthly mean for June.			
					Highest.	Year.	Lowest.	Year.
<i>Kansas.</i>	°	Years	°	°	°	°	°	°
Eureka Ranch.....	75.9	9	70.8	- 5.1	80.0	1890	70.8	1892
Independence.....	74.7	20	77.0	+ 2.3	79.0	1872	70.8	1889
Salina.....	75.4	9	74.4	- 1.0	79.3	1890	71.2	1891
<i>Louisiana.</i>								
Grand Coteau.....	79.8	9	78.0	- 1.8	82.0	1891	78.0	1892
<i>Maine.</i>								
Orono.....	62.0	22	63.3	+ 1.3	64.8	1884, 1889	57.5	1881
<i>Maryland.</i>								
Cumberland.....	68.6	21	73.3	+ 4.7	74.0	1874	65.3	1878
<i>Michigan.</i>								
Kalamazoo.....	67.2	15	69.9	+ 2.7	70.0	1887	63.7	1889
<i>Missouri.</i>								
Sedalia.....	74.2	10	75.2	+ 1.0	80.5	1890	71.6	1891
<i>Montana.</i>								
Fort Custer.....	63.8	11	.....	.....	66.5	1884	60.8	1891
<i>Nebraska.</i>								
Fort Robinson.....	67.4	7	62.6	- 4.8	71.7	1887	62.5	1891
Genoa (near).....	69.4	16	68.9	- 0.5	72.8	1890	66.4	1878
<i>Nevada.</i>								
Browns.....	75.7	21	74.0	- 1.7	83.7	1873	69.0	1882
Carson City.....	64.8	14	61.3	- 3.5	69.9	1876	60.6	1891
<i>New Hampshire.</i>								
Hanover.....	64.0	21	67.9	+ 3.9	68.8	1876	61.5	1881
<i>New Mexico.</i>								
Deming.....	81.2	10	88.2	+ 7.0	88.2	1892	77.5	1884
Fort Wingate.....	69.8	21	65.7	- 4.1	75.2	1881	63.6	1891
<i>New York.</i>								
Cooperstown.....	64.0	21	66.4	+ 2.4	70.0	1876	59.0	1881
Plattsburgh Barracks.....	64.8	21	64.7	- 0.1	68.8	1872	60.8	1881
<i>North Carolina.</i>								
Lenoir.....	70.4	20	72.5	+ 2.1	75.0	1874	63.6	1887
<i>Oklahoma.</i>								
Fort Reno.....	75.0	9	.....	.....	76.9	1890	72.5	1889
Fort Sill.....	77.9	20	75.3	- 2.6	83.2	1881	73.8	1889
<i>Oregon.</i>								
Bandon.....	56.6	8	54.8	- 1.8	59.8	1891	54.1	1887
Eola.....	59.6	22	61.2	+ 1.6	65.0	1889	54.5	1873
<i>Pennsylvania.</i>								
Dyberry.....	64.1	19	66.3	+ 2.2	66.8	1884	60.4	1881
Grampian Hills.....	66.5	21	71.7	+ 5.2	71.7	1892	61.3	1878
Wellsborough.....	65.7	13	64.8	- 0.9	71.6	1883	61.1	1881
<i>South Carolina.</i>								
Statesburgh.....	76.4	11	75.4	- 1.0	80.5	1881	72.4	1884
<i>South Dakota.</i>								
Fort Sully.....	69.1	21	65.8	- 3.3	76.1	1871	63.6	1877
<i>Texas.</i>								
Austin.....	83.4	19	80.3	- 3.1	85.9	1881	79.1	1877
Silver Falls.....	75.6	5	75.6	+ 3.0	78.6	1892	71.8	1889
<i>Utah.</i>								
Terrace.....	73.1	20	72.2	- 0.9	79.3	1878	60.8	1885
<i>Vermont.</i>								
Stratford.....	65.8	19	64.5	- 1.3	71.1	1884	58.4	1881
<i>Virginia.</i>								
Dale Enterprise.....	72.3	12	74.9	+ 2.6	78.5	1890	68.2	1882
<i>Washington.</i>								
Fort Townsend.....	58.7	19	57.2	- 1.5	61.7	1888	56.0	1891
<i>West Virginia.</i>								
Parkersburgh.....	75.2	11	73.2	- 2.0	82.9	1885	68.0	1886
<i>Wisconsin.</i>								
Embarrass.....	68.1	21	64.8	- 3.3	73.2	1873	63.2	1889
Madison.....	67.8	15	65.3	- 2.5	72.4	1873	63.5	1889
<i>Wyoming.</i>								
Fort Washakie.....	62.9	8	58.5	- 4.4	68.9	1887	58.5	1892

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was above the normal from the lower Missouri and middle Mississippi valleys over the Lake region and the Atlantic coast states north of the 35th parallel; it was also above the normal from New Mexico over central and southern Texas, and at interior stations in Washington. The mean temperature was below the normal from the western Lake region and Manitoba to the middle and south Pacific coasts and Arizona; it was also below the normal along the south Atlantic and middle and east Gulf coasts, over Florida, and from the west Gulf coast to the middle-eastern slope of the Rocky Mountains. The greatest departure above the normal temperature was noted in an area extending from eastern Ohio

over the District of Columbia and northern Virginia, where it exceeded 4, and the most marked departure below the normal temperature occurred over western North Dakota, and on the south Pacific coast, where it was more than 4.

YEARS OF HIGHEST MEAN TEMPERATURE FOR JUNE.

At Boston, Mass., Narragansett Pier, R. I., New York, N. Y., Philadelphia, Pittsburg, and Grampian Hills, Pa., Cleveland, Ohio, Abilene, Tex., and Deming, N. Mex., the mean temperature was the highest ever reported for June. The highest mean temperature for June occurred in the Carolinas, northern Georgia, and eastern Tennessee, and from Michigan to the lower Ohio valley, in 1890; from the Oregon coast over the northern plateau and the north part of the middle plateau in 1889; on the south Pacific coast in 1883; from the middle-eastern slope of the Rocky Mountains over the south part of the Gulf States in 1881; in New York and Pennsylvania in 1876; and from Virginia and Maryland over Kentucky and central Tennessee in 1874.

YEARS OF LOWEST MEAN TEMPERATURE FOR JUNE.

At Merritts Island, Fla., Grand Coteau, La., Eureka Ranch, Kans., Huron, S. Dak., Fort Washakie, Wyo., and San Diego, Cal., the current month was the coolest June on record. The lowest mean temperature for June was noted from Michigan and Wisconsin to east Texas in 1889; in Washington in 1887; in the south Atlantic and east Gulf states and in the Sacramento Valley, California, in 1884; and from the lower lake region to the New Jersey and south New England coasts in 1881.

MAXIMUM TEMPERATURE.

At Nantucket, Mass., Fort Stanton, N. Mex., Montrose, Colo., Spokane and Walla Walla, Wash., and Keeler, Cal., the maximum temperature was higher, and at Albany, N. Y., and Tatoosh Island, Wash., it was as high as previously reported for June.

The highest temperature reported at a regular station of the Weather Bureau in June, 1892, was 116 at Yuma, Ariz., on the 20th, and the temperature rose to 100 or above in the Sacramento, San Joaquin, middle and lower Colorado, and Gila valleys, at El Paso, Abilene, and Amarillo, Tex., Dodge City, Kans., Pueblo, Colo., Walla Walla, Wash., and Micco, Fla. The mean temperature was above 90, except at stations on the south New England, southern New Jersey, and North Carolina coasts, at Lake Michigan stations, over Minnesota and North Dakota, on the northeast slope of the Rocky Mountains, and along the Pacific coast. The lowest maximum temperature was noted at Eureka, Cal., where it was 65; it was 69 at Tatoosh Island, Wash., and 80 at Block Island, R. I. In the Colorado Desert, Cal., the maximum temperature rose above 120.

MINIMUM TEMPERATURE.

At Galveston, Palestine, and Abilene, Tex., Concordia, Kans., Valentine, Nebr., Denver, Colo., Fort Stanton, N. Mex., Walla Walla, Wash., Red Bluff, San Francisco, Keeler, and Los Angeles, Cal., the minimum temperature for the current month was lower, and at El Paso, Tex., Yuma, Ariz., Roseburgh, Oregon, and Fort Canby, Wash., it was as low as previously reported for June.

The lowest temperature reported by a regular station of the Weather Bureau in June, 1892, was 27 at Baker City, Oregon, on the 2d. The minimum temperature was below 40 in northern and eastern New England, and north of a line traced from eastern Upper Michigan to west-central Minnesota, thence to southern New Mexico, thence to southeastern Arizona, thence northward over Arizona, thence to east-central California, and east of this line continued to western Oregon, thence eastward over the valley of the Columbia River, and thence to extreme northwest Washington. The minimum temperature was also below 40 at Point Reyes Light, Cal. The minimum temperature was highest at Key West, Fla., where it was 70, and it was above 60 along the North Carolina coast, in South Carolina, Georgia, and Alabama, and along the middle and west Gulf coasts.

Reports of voluntary observers show temperature below freezing in the interior of Maine, northern New Hampshire, northern Minnesota, at points in the Dakotas and Nebraska, and in the Rocky Mountain and plateau regions, the lowest reading, 12, being reported at Cumbres, Colo.

RANGES OF TEMPERATURE.

The greatest daily ranges of temperature are shown in the table of miscellaneous meteorological data. The greatest monthly range of temperature, 70, was noted at Baker City, Oregon. The monthly range exceeded 60 over the northern and southern plateau regions and in central Nebraska. From the Rocky Mountain and plateau regions the monthly ranges decreased eastward to 30 on the south New England coast, southeastward to less than 30 on the south Atlantic and Gulf coasts, and westward to less than 30 at points along the immediate Pacific coast.

TEMPERATURE JANUARY TO JUNE, INCLUSIVE.

For the period January 1 to June 30, 1892, the temperature averaged about normal in the middle Atlantic states, the Lake region, the extreme northwest, and on the north Pacific coast. In New England, the southeast slope of the Rocky Mountains, and over the northern plateau region the mean temperature averaged about 1 above the normal for the period named. At Key West, Fla., and over the middle plateau region the mean temperature was about 2 deficient, and in the south Atlantic, east and west Gulf states, the Ohio Valley and Tennessee, the upper Mississippi and Missouri valleys, on the northeast and middle-eastern slopes of the Rocky Mountains, in the southern plateau region, and along the middle and south Pacific coasts the deficiency was about 1.

PERIODS OF HIGH TEMPERATURE.

On the 10th a warm wave appeared over the Dakotas and Nebraska, with temperature above 90 in central Nebraska. By the 11th this warm wave extended over the Mississippi Valley, with the highest temperature of the month at Davenport, Iowa, and New Orleans, La. On the 12th the warm wave occupied the Mississippi Valley and the western Lake region, with temperature above 90 from Lake Superior to the middle Gulf coast. On the 13th temperature 90 and above was noted from Lake Huron over northern New England, and on the 14th the highest temperature of the month was noted along the New England coast and thence over New Jersey, eastern Pennsylvania, and Maryland.

On the 15th the highest temperature of the month was noted over the interior of the east Gulf states. On the 16th this warm wave caused the highest temperature of the month in the Ohio Valley and Tennessee, and at Lake Erie and southern Lake Michigan stations. On the 20th the temperature rose above 100 in the central valleys of California and in the lower Colorado and Gila valleys. On the 23d the highest temperature of the month, 94, occurred in the District of Columbia and eastern Virginia, and on the 24th the maximum for the month was noted along the south Atlantic coast. On the 24th the highest temperature of the month was noted at stations on the immediate Pacific coast north of the 40th parallel. The 26th to the 28th marked the period of highest temperature over the middle and northern plateau regions and on the northeast slope of the Rocky Mountains. On the 29th this warm wave advanced over the Southwestern States.

PERIODS OF LOW TEMPERATURE.

On the 1st the lowest temperature of the month was noted from western South Dakota and eastern Wyoming to western Texas, a reading of 32 being reported at Lander, Wyo.; the lowest temperature of the month was also reported at Lake Michigan stations on the 1st. On the 2d the cool wave occupied districts between the Mississippi River and the Rocky Mountains, and on the 3d the lowest temperature of the month was noted along the Mississippi River from Vicksburg, Miss., to Memphis, Tenn., and at Augusta, Ga., and in north-

eastern Lower Michigan. On the 4th the lowest temperature of the month was reported at stations on Lake Erie, and at New Orleans, La., and Meridian, Miss. During the 5th and 6th this cool wave was attended by the lowest temperature of the month at points along the south Atlantic coast.

From the 7th to 9th the lowest temperature of the month occurred on the north Pacific coast, and on the 10th and 11th a cool wave occupied southern California and Arizona. On the 11th the lowest temperature of the month was noted over the eastern lower lake region, generally in the middle Atlantic and New England states, and at Atlanta, Ga. By the 12th this cool wave had extended over Virginia and North Carolina, attended by the lowest temperature of the month in those states. In Montana and North Dakota the minimum temperature for the month was noted on the 22d and 24th, respectively.

FROST.

On the 11th frost was general in the valleys of northern and

southern Maine and along the eastern Massachusetts coast. At Hyannis and New Bedford, Mass., heavy frost was reported. On the 29th frost was reported at Buckhannon, W. Va. Frost was reported at Wheeler, Ohio, on the 15th. In the Lake region frost was noted in Lower Michigan on the 28th to 30th, and in Upper Michigan on the 3d. In northern Wisconsin frost occurred on the 1st, 2d, 3d, 8th, 29th, and 30th. Frost was noted at points in North Dakota on the 8th, 14th, 16th, 17th, and 24th, and on the 30th it was reported from North Dakota over northwestern Iowa. Light frost was noted about Yankton, S. Dak., on the 2d, and near Valentine, Nebr., on the 1st and 17th. On the 1st frost was noted generally in the middle and southern Rocky Mountain regions, and at Fort Stanton, N. Mex., heavy frost nipped tender vegetation. At Havre, Mont., frost was reported on the 13th, and at Olympia, Wash., on the 21st. Frost was reported at intervals during the month in the plateau region, and in the mountains of California, Oregon, and Washington.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for June, 1892, as determined from the reports of about 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In June the monthly precipitation is usually greatest over central and east portions of the Florida Peninsula, where it exceeds 8.00; it exceeds 6.00 along the south Atlantic and middle Gulf coasts, and in areas in Illinois and Iowa. Over the greater part of the country from the eastern Rocky Mountain slope to the Atlantic coast south of the 40th parallel the normal precipitation for June is 4.00 to 6.00. Over the plateau regions, and in California south of the 40th parallel, the precipitation for June is generally less than 1.00.

In June, 1892, the monthly precipitation exceeded 10.00 in adjoining parts of northern Illinois, northeastern Iowa, and southern Wisconsin, over a great part of the Florida Peninsula and adjoining parts of southern Louisiana and eastern Texas, in small areas in the southern Lake region, eastern North Carolina, southeastern South Carolina, and in adjoining parts of northwestern South Carolina and northeastern Georgia. On the south New England coast, in eastern Maryland, Delaware, and extreme southeastern Pennsylvania, and over a great part of the Lake Superior region, less than 2.00 was reported. The monthly precipitation was also less than 2.00 on the middle-eastern slope of the Rocky Mountains and thence to the middle Missouri valley, generally over the Rocky Mountain and plateau regions, and on the Pacific coast. Over the greater part of Arizona and southeastern California no precipitation was reported.

DEPARTURES FROM NORMAL PRECIPITATION.

The monthly precipitation was in excess of the average for June from the extreme upper Mississippi valley over the Lake region, and the interior of Pennsylvania, New York, and New England; it was also in excess from the northeast slope of the Rocky Mountains to eastern Texas. In the Missouri, Red River of the North, lower Ohio, and middle and lower Mississippi valleys, and in the Pacific coast states, the monthly precipitation was deficient. The greatest excess, 8.90, was noted at Duluth, Minn. The excess was 6.00, or more, from east-central Iowa over northern Illinois, and at Palestine, Tex., and

it was 2.00 to 4.00 in the lower lake region, upper Saint Lawrence valley, extreme upper Mississippi valley, and at Helena, Mont. The most marked deficiency, 4.40, was noted at Omaha, Nebr., and the deficiency was more than 2.00 from the middle Mississippi valley over southern Nebraska and northern Kansas, at Hatteras, N. C., Pensacola, Fla., Mobile, Ala., Little Rock, Ark., in Manitoba, and at Marquette, Mich., and Medicine Hat, N. W. T.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: lower lake region, 188; Key West, Fla., 149; upper lake region, 143; west Gulf states, 125; upper Mississippi valley, 124; northeast slope of the Rocky Mountains, 123; middle plateau region, 117; south Atlantic states, 113. In districts where the precipitation was deficient the percentage of the normal was about as follows: middle Pacific coast, 23; southeast slope of the Rocky Mountains, 39; northern plateau, 53; north Pacific coast, 60; Missouri Valley and southern plateau, 70; middle-eastern slope of the Rocky Mountains, 71; extreme northwest, 74; east Gulf states, 78; New England, 84. In the middle Atlantic states, the Ohio Valley and Tennessee, and on the south Pacific coast the monthly precipitation averaged about normal.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for June for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for June, 1892; (4) the departure of the current month from the average; (5) and the extremes for June during the period of observation and the years of occurrence:

State and station.	(1) Average for the month of June.	(2) Length of record.	(3) Total for June, 1892.	(4) Departure from average.	(5) Extremes for June.			
					Greatest.		Least.	
					Am't.	Year.	Am't.	Year.
<i>Arizona.</i>	<i>Inches.</i>	<i>Years.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	
Fort Apache.....	0.67	16	0.15	— 0.52	3.27	1882	0.00	1877, 1890
Fort Mohave.....	0.05	21	0.00	— 0.05	1.00	1872	0.00	"
Whipple Barracks.....	0.17	21	0.00	— 0.17	1.24	1872	0.00	†
<i>Arkansas.</i>								
Lead Hill.....	4.85	10	5.33	+ 0.48	7.14	1882	2.18	1890
<i>California.</i>								
Fort Bidwell.....	1.07	21	1.46	+ 0.39	4.29	1884	T.	1883
Riverside.....	0.07	11	.....	.....	0.52	1884	0.00	"
<i>Colorado.</i>								
Las Animas.....	1.74	9	1.06	— 0.68	2.79	1884	0.05	1890
<i>Florida.</i>								
Merritts Island.....	7.49	14	5.83	— 1.66	14.28	1889	3.32	1878